ABSTRACT FOR THE DISSERTATION

TITLE OF THE ABSTRACT :

Effectiveness of User Controlled Peroneal Stimulator for foot drop in patients with hemiplegia following Cerebrovascular Accident in an Indian Rehabilitation set up: A Randomized Control Trial, Pilot Phase

DEPARTMENT:

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OBJECTIVES:

The study proposes to:

• Compare the orthotic effect of a user based PS to AFO in hemiplegic foot drop rehabilitation.

• Compare the effectiveness of the manually controlled peroneal nerve stimulator for gait training during sub-acute and chronic phases of stroke rehabilitation and in patients with two different levels of cognitive ability as measured by MMSE.

• Evaluate the subjective perception of patients regarding the effectiveness of the manually operated hand switch in the Indian rehabilitation setting.

METHODS:

20 patients with hemiplegia following cerebrovascular accident within 1 year and with unilateral foot drop and ambulating with aids were randomized into intervention and control group (10 in each group). The intervention group received

1 hour of ambulation training for 3 weeks with indigenously designed, user controlled peroneal stimulator along with conventional therapy. The control group received the conventional therapy of ambulation training with ankle foot orthosis and walking aids. A pre-intervention analysis and a post intervention analysis after 3 weeks was done for primary and secondary outcome measures by a neutral assessor. The primary outcome included the 6 minute walk test and 10 meter walk test. The secondary outcome measures were spatial asymmetry, stride length, stance percentage and dynamic ankle angle change during the ambulation.

RESULTS:

The study showed some orthotic effect of a user controlled PS but in comparison to an AFO, it was inconclusive in terms of walking speed, endurance and kinematic gait parameters. The orthotic effect of the PS when measured in terms of dynamic ankle angle change achieved during the ambulation showed a significant change with nearly two-third of normal angle change during the swing phase of the gait phase. The stimulator had a better orthotic effect in patients in the subacute phase of rehabilitation and those with good cognitive abilities. The stimulator received a mixed response from the patients regarding its effectiveness as an orthosis with 50 % patients preferring the device over the AFO and 60% claiming no difficulty in use of the device. The study has demonstrated a user operated hand switch PS as an alternative to an AFO for foot drop correction, in the Indian rehabilitation setting. This needs to be further technically improved and its efficacy investigated on a larger scale.

Keywords:

Peroneal stimulator, Ankle foot orthosis, Foot drop, Cerebrovascular accident